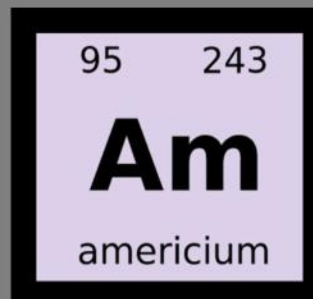


Free Reading Sample

The Magical
Elements
Element 95

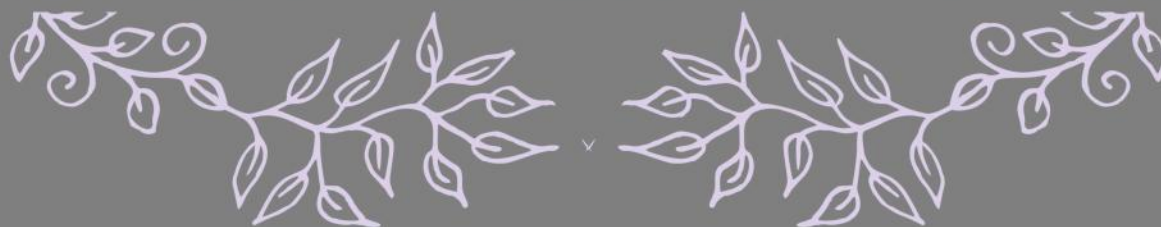
Americium, Presented By Amerine
From The Magical Elements of the
Periodic Table Series

Amerine



Americium

By Sybrina Durant with Illustrations by Pranavva et al.



Amerine The Actinide Knight Presents Americium

This Element 95 book features the periodic table element, Americium. It is presented by Amerine, a member of the Actinide Knights. Each knight has a magical sword or other medieval weapon tipped with an element that gives them unique powers. Their powers are based on the properties of its periodic table element.

Amerine is just one of the 118 elementals who will present all of the Magical Elements of the Periodic Table to readers who are curious about the wonders of the world.



Amerine introduces Americium in her book.

The Actinide Knights and their other techno-magical friends are the perfect group to introduce you to the elements in the Periodic Table. Hopefully, this Magical Elements of the Periodic Table book will spark an interest in the magical and real world properties of all the elements known today. You may be surprised at how prominently they feature in our every day lives.

Each page in this book contains terms that might not be completely familiar to the reader. Refer to the definitions in the back of the book to get a clear understanding of each meaning.

There is also a fun elemental themed Periodic Table at the back of the book. It features 118 elements presented by fanciful characters like unicorns, dragons, wizards, knights and goblins.. They want you to remember that if there's no metal...there's no magic or technology.

Remember, "No metal – No Magic. . .and No Technology".

It's Techo-Magical.

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Americium is an Actinide Metal

Americium (Am) was first produced in late 1944 by Glenn T. Seaborg, Ralph A. James, Leon O. Morgan, and Albert Ghiorso at the wartime Metallurgical Laboratory of the University of Chicago (now Argonne National Laboratory) in Illinois.

It is a synthetic, silvery-white radioactive metal that is both heat and electrically conductive.

It is paramagnetic, meaning it is weakly attracted to magnetic fields, over a wide temperature range, from liquid helium temperatures up to room temperature and above.

It is relatively soft, easily deformable, and more malleable than uranium or neptunium. It can be drawn into wires and pressed into thin sheets.

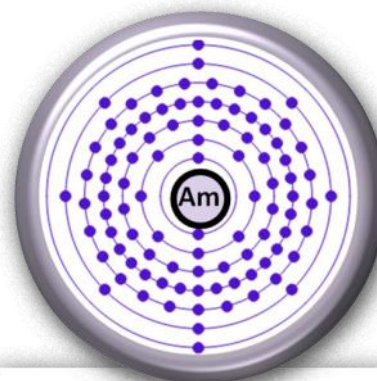
As a transuranium element, Americium is part of the radioactive, synthetic actinide row. Located below plutonium and curium, it falls within the Actinide series.

LEGEND

Alkali Metals
Alkali Earth Metals
Transition Metals
Post-Transition (or Other Metals)
Metalloids
Non-Metals
Halogens
Noble Gases
Rare Earth Lanthanide Metals
Actinide Metals
Super Heavy—Radioactive



Americium Element



Atomic Structure

Actinide Metals—Any of a series of chemically similar metallic elements with atomic numbers ranging from 89 (actinium) to 103 (lawrencium). All of these elements are radioactive, and two of the elements, uranium and plutonium, are used to generate nuclear energy. The lanthanides and actinides are sometimes called the inner transition metals, referring to their properties and position on the table. They are actinium, thorium, protactinium, uranium, neptunium, plutonium, americium, curium, berkelium, californium, einsteinium, fermium, mendelevium, nobelium, and lawrencium.



Americium is an intriguing element that belongs to the Actinide series in the periodic table. With the chemical symbol "Am" and an atomic number of 95, it is known for its radioactive properties. Discovered in the early 1940s, Americium is named after the Americas, reflecting its significance in American science and industry during that period.

Americium was first synthesized in 1944 by a team of scientists, including Glenn T. Seaborg, Albert Ghiorso, and Emilio Segrè. They discovered it through a process that involved bombarding plutonium with neutrons. This method helped create new elements, and Americium was one of the first synthetic elements to be produced. Due to its unique properties, it has garnered interest in various fields, particularly in nuclear science and technology.

One of the notable features of Americium is its radioactivity. Americium primarily emits alpha particles, which are a type of radiation made up of two protons and two neutrons. While alpha radiation is not highly penetrating and can be stopped by a sheet of paper or skin, it can be harmful if Americium is ingested or inhaled. Due to these properties, safety precautions are crucial when handling Americium, as exposure to radiation can lead to health issues, including cancer.

Americium is used in several practical applications. One of the most common uses is in smoke detectors. Americium-241, a specific isotope of Americium, is used in ionization smoke detectors. In these devices, the Americium emits alpha particles, which ionize the air in a small chamber. When smoke enters this chamber, it disrupts the flow of ions, triggering the alarm. This critical safety feature has made homes and buildings safer from fire hazards.

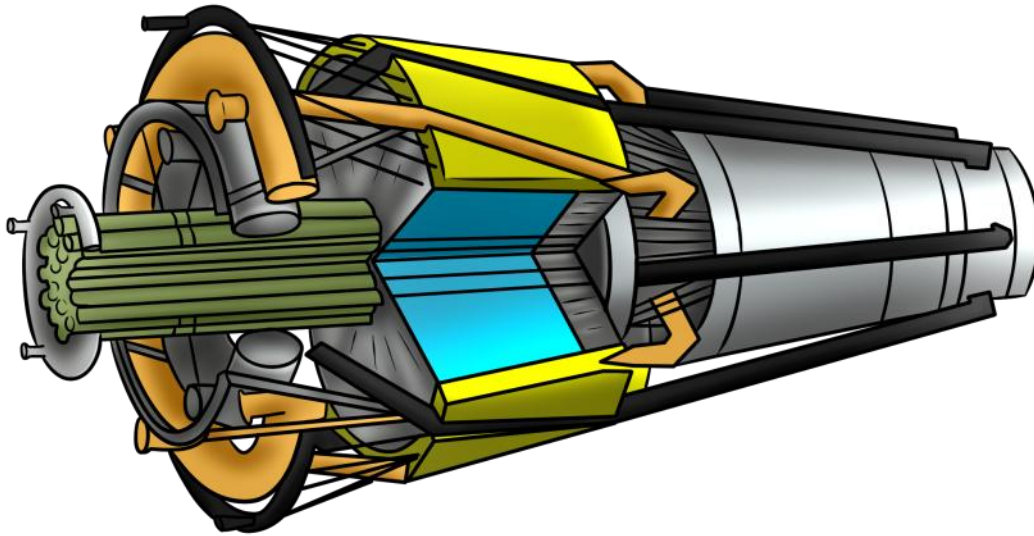
In addition to smoke detectors, Americium also has applications in industry and research. It can be found in certain types of gauges that measure thickness, density, or composition of materials. These gauges use Americium's radioactive properties to provide accurate measurements in manufacturing processes. Furthermore, Americium is utilized in some medical applications, particularly in radiation therapy and as a tracer in various diagnostic tests.

The production of Americium is usually done in nuclear reactors or through the reprocessing of spent nuclear fuel. Given its radioactive nature, handling Americium requires specialized facilities and trained personnel to ensure safety and minimize risks. Researchers continue to study Americium to understand its properties better and explore further potential applications in technology and medicine.

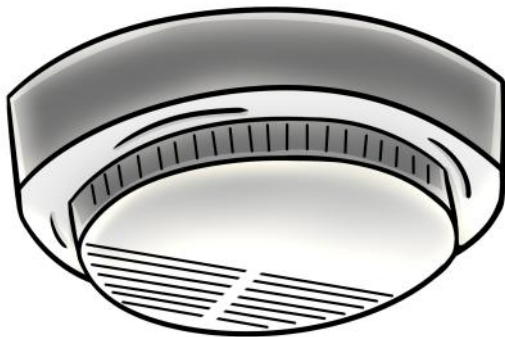
Despite its benefits, the use of Americium also raises environmental concerns. Radioactive waste management is a critical issue in nuclear science. Efforts are ongoing to find safe and effective ways to manage and dispose of radioactive materials, including those containing Americium. This is important to protect both human health and the environment.

Americium is a fascinating element with a blend of unique properties that make it valuable in various applications, particularly in safety devices and industrial measurements. While it offers significant benefits, its radioactive nature requires careful handling and consideration of safety protocols. As science advances, ongoing research may uncover even more ways to utilize Americium responsibly and effectively.

Uses For Americium



Americium, a synthetic element, has significant potential in the field of space exploration, particularly in its application for spacecraft nuclear batteries. These advanced energy sources are crucial for powering deep space missions, where traditional solar power becomes less effective due to distance from the Sun. By utilizing americium, spacecraft can benefit from longer-lasting and more reliable energy, thereby enhancing mission duration and enabling a greater range of scientific experiments far beyond our planet. This innovation represents a major advancement in space technology.



Americium plays a crucial role in enhancing the sensitivity of next-generation smoke detectors. This synthetic radioactive element, specifically Americium-241, is utilized in ionization smoke detectors due to its ability to emit alpha particles. By increasing the ionization process within the detection chamber, Americium significantly boosts the ability of these devices to identify smoke particles more effectively. As a result, home and commercial safety can be elevated, offering faster and more reliable alerts in the event of fire hazards.

The Source of Americium



Americium is produced by bombarding plutonium-239, an isotope of plutonium, with high energy neutrons. Americium is produced when plutonium absorbs neutrons in nuclear reactors

Americium is a synthetic element that was first discovered in the 1940s. It is a man-made element, meaning it does not occur naturally in large amounts but is created through specific nuclear reactions. Americium is known for its radioactivity and has several important applications, most notably in smoke detectors and certain types of medical imaging. But how is this interesting element produced, and what is the story behind its main ingredient, plutonium-239?

Americium is produced by bombarding plutonium-239 with high-energy neutrons. This process primarily takes place in nuclear reactors, where the conditions are just right for such reactions to occur. Plutonium-239, an isotope of plutonium, plays a crucial role in this process. But first, let's understand what plutonium-239 is and why it was chosen for the production of americium.

Plutonium-239 is one of several isotopes of plutonium that can be used in nuclear reactions. It was selected for its capabilities during the mid-20th century when scientists were exploring ways to generate energy through fission reactions. Its favorable properties, like a relatively long half-life and the ability to readily absorb neutrons, made it the ideal candidate for further exploration.

The story of plutonium-239 begins during the Manhattan Project in World War II. Scientists were racing to develop nuclear weapons, and plutonium emerged as a valuable player in this quest. Plutonium was studied alongside uranium, with teams investigating different isotopes. The specific isotope, plutonium-239, was identified and isolated due to its ability to sustain a chain reaction—a vital characteristic for a nuclear weapon.

Once the war ended, the researchers were left with a deep understanding of plutonium-239. Its properties were further examined and harnessed for peaceful uses, such as in nuclear power plants. As the world began to recognize the potential dangers of radioactive materials, scientists sought ways to utilize nuclear processes for beneficial purposes. This shift led to the use of plutonium-239 not just for energy generation, but also for the production of other artificial elements, like americium.

Amerine Presents Americium



Did You Know?

Americium's discovery remained a secret until 1945 due to its potential importance in nuclear weapon development. Glenn Seaborg first announced it on a children's radio show, the Quiz Kids. The first substantial amounts of metallic americium were not prepared until 1951.



- Americium is named after the Americas in a nod to the naming pattern of the periodic table, since it sits directly below europium, which was named after Europe. This connection reflects a tradition in chemistry of honoring geographic regions and important cultural landmarks through element names. Americium itself is a synthetic element, first produced in a laboratory, and its name helps link modern scientific discovery with a broader historical context. The parallel between americium and europium makes the name especially memorable, showing how the periodic table often preserves subtle relationships between elements through both their properties and their names.
- Beginning in 2004, the United States ceased domestic production of Americium, creating a significant gap in the national supply chain for this important isotope. As a result, Am-241 was not available for commercial sale in the United States for many years. In 2020, the Department of Energy recognized the strategic and scientific importance of restoring a long-term domestic supply and took steps to reestablish access. This decision helped address critical needs in research, industry, and safety applications that depend on Am-241. The restoration of availability marked an important move toward strengthening U.S. isotope production and reducing reliance on foreign sources.
- It is the one actinide that is found in almost every household: as an isotope that produces ionizing radiation, it is an essential component of smoke detectors. The americium compound emits alpha particles that strike

Amerine The Knight With The Americium Swords

Symbol: Am Atomic Number: 95 Atomic Mass: 243

Americium is located in Period 7 and is often considered part of Group 3 or is explicitly designated as an f-block actinoid.

The atomic symbol is Am. It's Atomic Number is 95. It's Atomic Mass is 243.00.

Magical Elements of The Periodic Table

Remember, "No Metal—No Magic."
...And no technology.

No Metal
Actinium To Zirconium

No Magic

Use this Periodic Table as you would any other to spark an interest in the magical and real world properties of all the elements known today. You may be surprised at how prominently they feature in our every day lives.

It's Techno-Magical

LEGEND

Alkali Metals
Alkali Earth Metals
Transition Metals
Post-Transition (or Other Metals)
Metalloids
Non-Metals
Halogens
Noble Gases
Rare Earth Lanthanide Metals
Actinide Metals
Super Heavy—Radioactive

Alloys are created when 2 or more metals are combined. Compounds are created when 2 or more non-metals are combined.

EXAMPLE OF A COMPOUND

Quincy Quick Lime = Used for Concrete

Quick Lime = + = Used for Concrete

Both Carbon and Oxygen are reactive nonmetals.

EXAMPLE OF AN ALLOY

White Wing White Gold = Used for jewelry, dental amalgams plus connectors, and switch and relay contacts for electronics.

95 243

Am
americium

Amerine **Smoke Detector**

Sybrina.com

Meet Amerine, The Knight With The



Amerine had grown up in MarBryn, where the valleys were green, the winters were long, and people learned early that safety was something worth building and defending. She studied science, metalwork, and the old village reactor systems that kept Kilmere warm and bright. When she was older, she became known as the Actinide Knight, a protector who carried twin Americium blades—weapons of controlled power, made to defend without causing ruin.

Glaros had once been a learned man too, but anger changed him. He believed power should be forced, not shared. He wandered from place to place, leaving fear behind him, until he came to Kilmere and saw the reactor as a prize. If he could seize its energy, he could turn the whole valley into a weapon. That was why Amerine was already on the move when the first smoke rose.

She crossed the edge of the valley with a quick, steady pace, her armor catching the early light. Below her, Kilmere shone softly, its walls golden and its cottages close together beneath cobalt banners. The air smelled of pine and thawing water, but under that calm lay a warning. Amerine knew how to feel for danger before it fully arrived.

By the time she reached the village square, fear had already spread. Lanterns flickered with a strange green glow, and the people stood tense and silent. Then Glaros appeared on the eastern ridge, tall in ash-gray robes, his staff planted in the ground like he owned the place. Dark energy curled around his hands as he began a chant that made the air feel heavy.

Amerine stepped forward with her twin blades lowered, so the villagers would know she was there to protect them. She saw the old grandmother clutching her shawl, the boy with a worn slingshot, and the craftsman with soot on his sleeves. They were frightened, but they were not broken. She would not let Glaros take that from them.

Glaros raised his staff, and a ring of blue fire burst from the tip, cold and sharp instead of warm. A cruel smile touched his mouth. "Do you see what I've done, Knight?" he rasped. "The reactor below this village can be bent to my will."

Amerine's right hand tightened on her sword. The blade hummed with pale light. The second blade answered with a softer tone, and the two sounds blended in a steady, ready harmony. "This ends now, Glaros," she said.

He laughed. "Only the weak speak of endings. I will shackle this village with fear."

Blue rings shot toward her, meant to bind her arms and legs. Amerine leapt aside with the grace of a dancer, her blades flashing as they cut the magic apart. The chains broke into harmless sparks that drifted to the ground like snow.

Glaros sent another wave of force at her, trying to push her back toward the reactor access below the square. Amerine kept moving, but not wildly. She had learned restraint long ago. Her blades were powerful, but they were meant to cut danger away, not spread it. She used careful footwork and precise strikes to keep the villagers safe while driving him toward the center of the square.

The sorcerer threw up phantom shapes—false shadows meant to frighten the crowd. Amerine saw through them. She knew his power depended on fear, and she would not give him any. With every bright slash, the false images broke apart, and the air seemed clearer.

Beneath the village, the reactor hummed steadily, protected by safeguards Amerine had helped install

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Amerine The Knight With The Americium Tipped Swords



Magical Elements of The Periodic Table

Create Your Own Magical Actinide Knight Elemental

Amerine The Knight With The Americium Swords

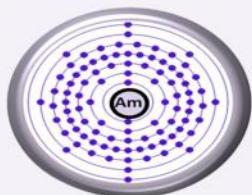
Symbol: Am Atomic Number: 95 Atomic Mass: 243



Magical Elemental Symbol



Produced by bombarding plutonium with neutrons



Atomic Structure

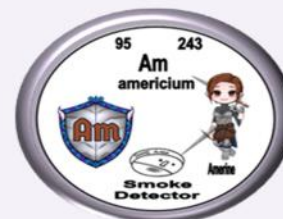
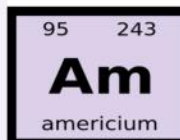


Amerine's Magical Abilities

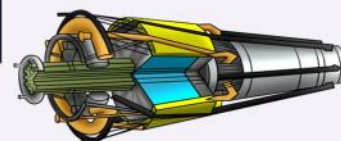
She can use her sword to create powerful energy waves that can make the wind blow really strong, create lightning in the sky, or make the ground shake like an earthquake.



Americium is a Actinide Metal



Americium Periodic Symbol



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Symbol:

Atomic Number:

Atomic Mass:

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Magical Elemental
Symbol

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Atomic Structure



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Americium Periodic
Symbol

Magical Abilities

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Uses For

I hope you enjoyed this sample



Amerine The Knight With
The Americium Swords

Symbol: Am Atomic Number: 95 Atomic Mass: 243

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home schoolers and anyone else who might enjoy it.**